

I claim:

1. A polynucleotide comprising the DNA sequence of SEQ ID NO: 1 and 10 to 150 additional consecutive nucleotides immediately upstream from SEQ ID NO: 1, or a substantial functional equivalent of the polynucleotide, wherein the polynucleotide is contained in SEQ ID NO: 2.
2. The polynucleotide of claim 1, wherein the DNA sequence of SEQ ID NO: 1 and the additional upstream nucleotides, or the substantial functional equivalent thereof, comprise a region of DNA that is homologous to or identical to a region of DNA comprising a portion of the human dystrophin gene, wherein the DNA sequence of SEQ ID NO: 1, or its substantial functional equivalent, is inverted when compared to the same sequence of the human dystrophin DNA.
3. The polynucleotide of claim 1, wherein the polynucleotide codes for a protein or polypeptide that binds to the human CD33 protein.
4. The polynucleotide of claim 1, wherein the polynucleotide codes for a protein or polypeptide that is expressed on a cell surface *in vivo*.
5. The polynucleotide of claim 1, wherein the polynucleotide codes for a plurality of translational stop codons.
6. The polynucleotide of claim 1, wherein SEQ ID NO: 1 codes for a protein or polypeptide that binds to the human CD33 protein.
7. The polynucleotide of claim 1, wherein SEQ ID NO: 1 codes for a protein or polypeptide that is expressed on a cell surface *in vivo*.
8. The polynucleotide of claim 1, wherein SEQ ID NO: 1 codes for a plurality of translational stop codons.
9. A regulatory DNA element comprising a polynucleotide selected from the group consisting of

- (a) the polynucleotide of claim 1, and
- (b) SEQ ID NO: 1, or a substantial functional equivalent thereof.

10. The regulatory element of claim 9, wherein the regulatory element controls the expression of a gene or other DNA sequence to which it is linked.

5 11. The regulatory element of claim 9, wherein the regulatory element regulates a transcriptional start site in the gene or other DNA sequence to which it is linked.

12. The regulatory element of claim 9, wherein the regulatory element regulates translation of mRNA transcribed from the gene or other DNA sequence to which it is linked.

13. The regulatory element of claim 9, wherein the regulatory element codes for a plurality of translational stop codons.

14. A polynucleotide that hybridizes to either strand of a polynucleotide selected from the group consisting of

- (a) the polynucleotide of claim 1, and
- (b) SEQ ID NO: 1, or a substantial functional equivalent thereof.

15 15. The polynucleotide of claim 14, wherein the polynucleotide comprises antisense RNA.

16. A vector comprising a transcription promotor operably linked to a selection from the group consisting of

- (a) the polynucleotide of claim 1, and
- (b) SEQ ID NO: 1, or a substantial functional equivalent thereof.

20 17. A cell comprising the vector of claim 16.

18. A cell comprising a selection from the group consisting of

- (a) the polynucleotide of claim 1, and
- (b) SEQ ID NO: 1, or a substantial functional equivalent thereof.

19. A protein or polypeptide encoded by a selection from the group consisting of

- (a) the polynucleotide of claim 1, and
- (b) SEQ ID NO: 1, or a substantial functional equivalent thereof.

20. The protein or polypeptide of claim 19 that is expressed on a cell surface *in vivo*.

21. The protein or polypeptide of claim 19 that binds to the human CD33 protein.

5 22. A polynucleotide comprising the DNA sequence of SEQ ID NO: 2, or a DNA sequence that is a substantial functional equivalent of SEQ ID NO: 2, wherein SEQ ID NO: 2 contains SEQ ID NO: 1 or a substantial functional equivalent thereof.

23. The polynucleotide of claim 22, wherein the polynucleotide codes for a polypeptide that cannot be produced in a coupled *in vitro* transcription-translation system in the absence of SEQ ID NO: 1, or the substantial functional equivalent thereof.

24. A protein or polypeptide encoded by the polynucleotide of claim 22.

25. The protein or polypeptide of claim 24, that binds to the human CD33 protein.

26. The protein or polypeptide of claim 24 that is expressed on a cell surface *in vivo*.

27. The protein or polypeptide of claim 26, wherein the protein or polypeptide is homologous to a portion of human dystrophin that is expressed on the cell surface *in vivo*.

28. The protein or polypeptide of claim 24 having a molecular weight of substantially 50, 40 or 25 Kd, obtainable by expression of the polynucleotide of SEQ ID NO: 2.

29. The protein or polypeptide of claim 28 having a sequence selected from the group consisting of:

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- peptide P1 having the sequence MYPIMEYSCSDRN;
  - peptide P2 having the sequence YIYIGNLNVADTM; and
  - peptide P3 having the sequence DDLGRAMESLVSVMTDEE.

30. The protein or polypeptide of claim 24, wherein the protein is a heterodimer.

31. The protein or polypeptide of claim 24 that is expressed in one or more of the group of tissues consisting of leucocytes, brain, muscle and placenta.
32. An antibody specific for a protein or polypeptide of claim 19.
33. An antibody specific for a protein or polypeptide of claim 24.
- 5 34. A method of screening for leukemic cells and associated disease states such as leukemia, comprising a selection from the group consisting of:
  - (a) analyzing DNA of cells to detect the presence of the polynucleotide of claim 1;
  - (b) analyzing DNA of cells to detect the presence of SEQ ID NO: 1, or a substantial functional equivalent thereof;
  - (c) analyzing DNA of cells to detect the presence of SEQ ID NO: 2, or a substantial functional equivalent thereof;
  - (d) analyzing protein of cells to detect the presence of the protein or polypeptide of claim 19; and
  - (e) analyzing protein of cells to detect the presence of the protein or polypeptide of claim 24.
35. The method of claim 34, wherein protein is detected using an antibody specific for a protein or polypeptide of claim 19.
36. The method of claim 34, wherein protein is detected using an antibody specific for a protein or polypeptide of claim 24.
- 20 37. A pharmaceutical composition comprising a polynucleotide selected from the group consisting of
  - (a) the polynucleotide of claim 1, and
  - (b) SEQ ID NO: 1, or a substantial functional equivalent thereof,
 and a pharmaceutically acceptable carrier.

38. The pharmaceutical composition of claim 37 wherein the composition comprises an effective amount of the polynucleotide for treatment of a disorder in which protein truncation plays a part.
39. A method of gene therapy comprising treating an affected individual with an effective amount of a polynucleotide selected from the group consisting of
  - (a) the polynucleotide of claim 1, and
  - (b) SEQ ID NO: 1, or a substantial functional equivalent thereof.
40. A method of treating an individual affected by a disorder in which protein truncation plays a part, comprising delivery of an amount of a polynucleotide effective to treat the disorder, wherein the polynucleotide is selected from the group consisting of
  - (a) the polynucleotide of claim 1, and
  - (b) SEQ ID NO: 1, or a substantial functional equivalent thereof.